

LINE EDGE ROUGHNESS CONTROL

ABSTRACT OF THE DISCLOSURE

5 A method for etching a layer through a photoresist mask with an ARC layer
between the layer to be etched and the photoresist mask over a substrate is provided.
The substrate is placed into a processing chamber. An ARC open gas mixture is
provided into the processing chamber. The ARC open gas mixture comprises an
etchant gas and a polymerization gas comprising CO and CH₃F. An ARC open
10 plasma is formed from the ARC open gas mixture. The ARC layer is etched with the
ARC open plasma until the ARC layer is opened. The ARC open gas mixture stopped
before the layer to be etched is completely etched.